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SOME HIMALAYAN FUNGI

FRANCES L. BALFOUR-BROWNE

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
BOTANY

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SOME HIMALAYAN FUNGI

By FRANCES L. BALFOUR-BROWNE

THE fungi described below were collected during the plant-hunting expeditions detailed as follows; 1938, F. Ludlow, G. Sherriff and G. Taylor in the Tibetan provinces of Kongbo and Takpo in the lower Tsangpo valley between Molo and the great bend of the Tsangpo river; 1947, F. Ludlow, G. Sherriff and H. H. Elliot in the provinces of Kongbo and Pome, an area farther to the north-east of that visited by the 1938 expedition; 1949, F. Ludlow, G. Sherriff and J. H. Hicks in Bhutan; 1952, O. Polunin, W. R. Sykes and L. H. J. Williams in Nepal, mainly in the eastern part of the province of Jumla at heights varying from 1,800 to 5,400 metres.

Fungi have only rarely been recorded from Tibet, Nepal or Bhutan and our knowledge of the mycology of the neighbouring regions of Sikkim and the Khasi Hills is largely due to the collections made by Sir Joseph D. Hooker in 1849-1850, during his survey of the flora of India, and to A. Barclay, who began to collect and study the life-histories of rusts, especially those from Simla. Since then but little has been recorded from the Himalayas, whereas there is a considerable literature, scattered among hundreds of papers, on the mycology of peninsular India and of Burma and Ceylon. In 1931 E. J. Butler and G. R. Bisby published *The Fungi of India*, a compilation of this literature and an enumeration of the fungi recorded to that date.

In the account which follows, the species of the *Clavariaceae* have been identified by E. J. H. Corner, to whom I am most grateful. He has also determined some species of *Lactarius*, *Clitocybe* and *Pleurotus*. Each description or note for which he is responsible is indicated by his initials in parenthesis.

As the primary objective of all four expeditions was the collection of phanerogamous plants the fungi were, for the most part, only picked up incidentally with no attempt at intensive collection. Nevertheless, Williams and his colleagues in Nepal succeeded in bringing home 87 specimens representing 79 species. The Tibetan fungi include 56 species, whereas only 7 were taken in Bhutan.

A number of the specimens in the collections studied have proved to be difficult to identify owing to over-pressing; this is particularly the case with the species of *Clavaria* and the Agarics from Nepal. The best results are to be obtained by light pressure and rapid drying, an ideal which, it is appreciated, is difficult to obtain in the field.

Since, as already indicated, the mycological flora of the Himalayan area is still very inadequately known, it is premature to discuss the relationships of the flora and the nature of the distribution of many of the species. Evidence is often quite insufficient to show whether a species previously only known from another part of the world is native or introduced accidentally with horticultural or economic plants or seeds. Even the natural distribution of fungi (as distinct from the artificial introduction) is a complex problem governed by the interaction of many factors, including not only

the nutritional, climatic, edaphic and biotic but also the special one of the dissemination of countless microscopic spores.

HYMENOMYCETES

Clitocybe diatreta Fr., Syst. Myc. i: 83 (1821).

NEPAL: Suli Gad, below Lulo Khola, 4,200 m.; in leaf soil of coniferous forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3456.

Distribution: Europe and Nepal. The present representatives do not differ in any particular from the European form and, like them, often have their stem bases balled up with the needles of coniferous trees.

Clitocybe infundibuliformis (Fr.) Quél., Champign. Jura & Vosges: 52 (1872).

Agaricus infundibuliformis Fr., Epicr. Syst. Myc.: 68 (1836).

NEPAL: Suli Gad, below Lulo Khola, 4,000 m.; in humus in coniferous forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3459.

Distribution: America, Europe, N. Africa and Nepal.

Pileus up to 3 cm. wide, infundibuliform, dry, smooth, 'brown': stem 3.5 cm. $\times$ 3-6 mm., 'very pale fawn': gills deeply decurrent, not anastomosing, crowded, 'white': spores $5-7 \times 4.3-5 \mu$, lacrymiform, very thin-walled, not amyloid: basidia $25-30 \times 7 \mu$, sterigmata 4: cystidia none: hyphae up to 18μ wide, clamped, inoderm on the pileus and $5-8 \mu$ wide, without pileocystidia or caulocystidia, the cells rather short, up to 150μ long in the stem, but not secondarily septate.

Except for the slightly wider spores, there is no difference from the deeper coloured forms of *C. infundibuliformis*. (E. J. H. C.)

Favolus sp. aff. **multiplex** Lév. in Ann. Sci. Nat. Sér. 3, Bot. xii: 203 (1844).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,850 m.; 1 Jan. 1947, *Ludlow, Sherriff & Elliot* 12058.

This fungus appears to be close to *F. multiplex* Lév., but its poor state of preservation makes identification uncertain. It is irregularly flabelliform, lobed, orange to ferruginous, of a fleshy, coriaceous texture when wet; brittle and semi-transparent when dry. The pileus surface is slightly rough with radiating striae. Pores are shallow, unevenly hexagonal to elongated and lacerated. Spores are hyaline, oval to elliptical, $2 \times 4 \mu$.

Pleurotus nepalensis Corner, sp. nov.

P. ostreati affinis, sed cystidiatus et sporis angustioribus (an incarnatis?).

Pileus ad 10×13 cm., applanatus, flabelliformis vel reniformis, primo spathulatus, laevis sed basim versus villosus-subfurfuraceus, pallide brunneolus, sicco cervicolor, margine tenui, paullum incurvato: stipite $1.5-2.5 \times 1.5-3$ cm., laterali, breviter villosus: lamellis decurrentibus, ad stipitem subanastomosis, confertis, ordinibus numerosis, c. 3-4 mm. latis, acie integro, cremeis: carne ut in *P. ostreato*: sporis $5-6 \times 1.5-2 \mu$, hyalinis, suballantoideis, haud amyloideis, 2-guttulatis: basidiis tetrasporis:

cystidiis $35-70 \times 9-15 \mu$, superficie lamellae et acie dispersis, projicientibus, tenuiter tunicatis, laevibus, clavatis vel ventricosis, interdum breviter appendiculatis: hyphis ad 20μ latis, fibulatis, in lamellis tenuiter tunicatis, in pileo et in stipite tunicis $1-2 \mu$ incrassatis, haud gelatinosis, pilei superficie applanatus $3-6 \mu$ latis.

NEPAL: Dhotbas, near Chakure Lekh, 3,000 m.; on dead tree trunk in *Tsuga*-forest; 12 Oct. 1952, *Polunin, Sykes & Williams* 5564. (Herb. Brit. Mus., holotype).

Distribution: known only from Nepal. (E. J. H. C.)

Gomphus floccosus (Schwein.) Singer in *Lloydia* viii: 140 (1945).

Cantharellus floccosus Schwein. in Trans. Amer. Phil. Soc., New Ser. iv: 153 (1832).

Forma **floccosus**.

Pileus up to 10 cm. high, 8 cm. wide, apparently without scales, infundibuliform, 'bright orange': stem $5-8 \times 1.5-2$ cm., solid, 'pink at the base': hymenium with radial, anastomosing, subdistant folds -1.5 mm. deep, forming elongate meshes 5-20 mm. long, not regularly dichotomous, 'pale yellow': spores $14-21 \times 7-10 \mu$, pale ochraceous, minutely rough: hyphae $3-25 \mu$ wide, without clamps.

The spores are wider than usual for *G. floccosus*.

NEPAL: Ratamata, Chakure Lekh, 3,300 m.; in humus in *Abies-Betula* forest; 12 Aug. 1952, *Polunin, Sykes & Williams* 395.

Distribution: hitherto known from N. America, China (Yunnan) and Japan, as a species in coniferous forests. (E. J. H. C.)

Forma **excavatus** Sm. & Morse in *Mycologia* xxxix: 525, figs. 7 & 8 (1947).

Pileus up to 10×4 cm. overall, narrowly infundibuliform, pervious to the base of the stem, wholly 'dull yellow': pileus slightly floccoso-squamulose: stem c. 1 cm. wide: hymenium narrowly plicate with crowded, radiating, repeatedly dichotomous folds -1 mm. deep, slightly anastomosing: spores $14-21 \times 6.5-8.5 \mu$, pale ochraceous, minutely rough: hyphae -12μ wide, without clamps.

S.E. TIBET: Kongbo, Deyang La, 3,800 m.; on the ground among moss in *Abies*-forest; 7 Aug. 1947, *Ludlow & Sherriff* 14440.

Distribution: N. America and Tibet. (E. J. H. C.)

Craterellus cornucopioides Fr., *Epicr. Syst. myc*: 532 (1838).

E. BHUTAN: Rocha Chu Valley, Trashiyangsi, 2,740 m.; in moss on ground in dense jungle; 24 Sept. 1934, *Ludlow & Sherriff* 977.

Distribution: cosmopolitan.

Lenzites eximia Berk. in Hook., *Journ. Bot.* vi: 134 (1854).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,730 m.; on dead trees; 24 Dec. 1946, *Ludlow, Sherriff & Elliot* 12034.

Distribution: Himalayas from Sikkim to S.E. Tibet.

Lenzites subferruginea Berk. in Hook., Journ. Bot. vi: 134 (1854).

Gloeophyllum edule Murr. in Bull. Torr. Bot. Cl. xxxiv: 480 (1907).

NEPAL: Lulo Khola, 3,900 m.; on trunk of fallen tree; 16 Sept. 1952, *Polunin, Sykes & Williams* 3445.

Distribution: previous records are from India, the Phillipines and Japan.

Lenzites sp. aff. **cyclogramma** Pat. in Bull. Soc. Myc. Franc. xxiii: 73 (1907).

S.E. TIBET: Pome, Gyadzung, Yigrong Chu, 2,590 m.; on pine; 23 Jan. 1947, *Ludlow, Sherriff & Elliot* 12178.

This species was described by Patouillard from Tonkin on *Cocos* and resembles a pale form of *Lenzites betulina* Fr. The Tibetan fungus appears to be very close to it but occurs on a different host. Cystidia are abundant but spores have not developed.

Merulius imbricatus Balfour-Browne, sp. nov.

Sporophoris imbricatis, liberis, non-resupinatis, pallide tomentosis; carnosotremellosis, sicco membranaceis vel corneis, 5 cm. latis, 15–20 cm. longis: hymenio ochraceo vel vinoso: poris gyrosis, irregularis, ad marginem elongatis et radiatis: trama ex hyphis ochraceis, gelatinosis, $\pm$ parallelis, composita: basidiis 4-sterigmatis, cylindraceo-clavatis, 15–18 μ longis, 3–5 μ latis: sporis globosis vel subglobosis, 4 μ diam. vel 4 $\times$ 4.5 μ .

S.E. TIBET: Pome, Gyadzung, Yigrong Chu, 2,550 m.; 12 Jan. 1947, *Ludlow, Sherriff & Elliot* 12187. (Herb. Brit. Mus., holotype).

Distribution: known only from S.E. Tibet.

The upper surface is composed of loosely interwoven, hyaline, thick-walled, septate, branching skeletal hyphae which give place to a zone of yellow $\pm$ parallel hyphae of slightly wider lumen, septate, branched and having walls which swell considerably in water: the subhymenium consists of thin-walled, septate, branched generative hyphae on which the 4-spored basidia are borne in palisade fashion; clamp connexions occur on all types of hyphae.

This species closely resembles *Merulius tremellosus* Fr. in structure but differs in its entirely non-resupinate habit, in colour and in spore characters.

Hericium caput-ursi (Fr.) Corner, comb. nov.

Hydnum caput-ursi Fr., Monogr. Hym. Suec. ii: 278 (1863).

S.E. TIBET: Kongbo, valley above Sang, 3,150 m.; in wet leaf mould under evergreen oak; 20 June 1938, *Ludlow, Sherriff & Taylor* 4988.

Spores 4.7–5.2 (–6) $\times$ 3.7–4.3 (–5) μ , amyloid, smooth. This is the form with elongate branches that has mistakenly been called *H. coralloides* by some authors.

Distribution: cosmopolitan. (E.J.H.C.)

Hydnum erinaceus Fr., Syst. Myc. i: 407 (1821).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,850 m.; on a conifer; 1 Jan. 1947, *Ludlow, Sherriff & Elliot* 12056.

Distribution: this species, common in the northern hemisphere, has previously been recorded abundantly in Sikkim.

Bondarzewia montana (Quél.) Singer in Ann. Myc. xxxix: 47 (1941).

Cerioporus montanus Quél. in Ass. Franc. xvi, 2: 589, t. 21, fig. 10 (1888).

Polyporus montanus (Quél.) Ferry in Rev. Myc. xix: 144 (1897).

Grifola montana (Quél.) Pilát, Atl. Champign. Eur., iii: 55 (1936).

NEPAL: Dhotbas, south of Chakure Lekh, 2,800 m.; on a dead trunk in *Tsuga*-forest; 12 Oct. 1952, *Polunin, Sykes & Williams* 5559.

'Fawn-coloured above, cream beneath': spores $6-7 \times 5-6 \mu$ (spore-body), densely echinulate with more or less flattened spines $1-1.5 \mu$ long, often in transverse rows, amyloid.

Distribution: Europe, Nepal and N. America.

The single specimen of this collection was not well preserved, but the characteristic spores were very abundant. I have preferred Singer's genus for the species because, as mentioned under *Amylaria himalayensis* (Clavariaceae), the alliance of *Bondarzewia* seems to be different from that of other polypores. (E. J. H. C.)

Fomes marginatus (Fr.) Gillet, Champign. Franc.: 683 (1878).

Polyporus marginatus Fr., Syst. Myc. i: 372 (1821).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,850 m.; on a dead conifer; 1 Jan. 1947, *Ludlow, Sherriff & Elliot* 12057.

NEPAL: Between Panlotbas and Ranga Chauthaka, south of Chakure Lekh, 285 m.; on dead tree-trunk; 11 Oct. 1952, *Polunin, Sykes & Williams* 5546.

Distribution: widespread in the northern hemisphere; it has also been recorded from India, Japan and Mexico.

Fomes roseus (Fr.) Cooke in Grevillea xiv: 21 (1885).

Polyporus roseus Fr., Syst. Myc. i: 372 (1821).

NEPAL: Munigaon, south-east of Jumla, 2,850 m.; on fallen tree-trunk; 28 Sept. 1952, *Polunin, Sykes & Williams* 5450.

Distribution: N. America, Europe, Asia Minor, India and Nepal.

Ganoderma lucidum (Fr.) Karst., in Rev. Myc. xxxix: 17 (1881).

Polyporus lucidus Fr., Syst. Myc. i: 353 (1821).

S.E. TIBET: Pome, Gyadzung, Yigrong Chu, 2,270 m.; in mixed forest; 20 Jan. 1947, *Ludlow, Sherriff & Elliot* 12162.

Distribution: cosmopolitan. Widely recorded from India.

Grifola sulphurea (Fr.) Pilát in Beih. Bot. Centralb. lii: 39 (1934).

Polyporus sulphureus Fr., Syst. Myc. i: 357 (1821).

S.E. TIBET: Pome, Gyadzung, Yigrong Chu, 2,590 m.; on pine trees; *Ludlow*,

Sherriff & Elliot 12172. Same locality; on *Tsuga dumosa* (D. Don) Eichl.; 22 Jan. 1947, *Ludlow, Sherriff & Elliot 12174*.

NEPAL: Dhotbas, south of Chakure Lekh, 2,550 m.; on dead tree-trunk; 12 Oct. 1952, *Polunin, Sykes & Williams 5560*.

Distribution: cosmopolitan.

Inonotus radiatus (Fr.) Karst., in *Rev. Myc.* iii: 19 (1881).

Polyporus radiatus Fr., *Syst. Myc.* i: 369 (1821).

NEPAL: Between Panlotbas and Ranga Chauthaka, south of Chakure Lekh, 2,550 m.; on moss-covered trunk; 11 Oct. 1952, *Polunin, Sykes & Williams 5537*.

Distribution: cosmopolitan.

Leptoporus borealis (Fr.) Pilát, *Atl. Champign. Eur.* iii: 234 (1936).

Polyporus borealis Fr., *Syst. Myc.* i: 366 (1821).

NEPAL: Between Panlotbas and Ranga Chauthaka, south of Chakure Lekh, 2,850 m.; on roots of trees; 11 Oct. 1952, *Polunin, Sykes & Williams 5545*.

Distribution: cosmopolitan.

Phellinus igniarius (Fr.) Quél., *Ench.*: 172 (1886).

Polyporus igniarius Fr., *Syst. Myc.* i: 375 (1821).

S.E. TIBET: Takpo, Kongbo Nga La, Tsangpo valley, 4,090 m.; on wood of *Betula utilis* Don; 13 May 1938, *Ludlow, Sherriff & Taylor 4249a*.

The spores are spherical, hyaline, 6 μ diam.

Distribution: previously recorded from Europe, Asia Minor, Eritrea and Madagascar.

Phellinus pini (Fr.) Pilát, *Atl. Champign. Eur.* iii: 516 (1936).

Daedalea pini Fr., *Syst. Myc.* i: 336 (1821).

NEPAL: Munigaon, south-east of Jumla, 2,850 m.; on fallen tree-trunk; 28 Sept. 1952, *Polunin, Sykes & Williams 5449*.

Distribution: America, Europe, India and Nepal.

Polyporellus brumalis (Fr.) Karst., in *Medd. Soc. Faun. Fl. Fenn.* v: 37 (1879).

Polyporus brumalis Fr., *Syst. Myc.* i: 348 (1821).

NEPAL: Between Samela and Dhaulakot, 2,550 m.; on fallen branch in forest; 5 May 1952, *Polunin, Sykes & Williams 3845*.

Distribution: cosmopolitan.

Polyporellus arcularius (Fr.) Pilát, *Atl. Champign. Eur.* iii: 75 (1936).

Polyporus arcularius Fr., *Syst. Myc.* i: 342 (1821).

NEPAL: Between Panlotbas and Ranga Chauthaka, south of Chakure Lekh, 2,850 m.; growing beneath roots of tree; 11 Oct. 1952, *Polunin, Sykes & Williams 5542*.

Distribution: cosmopolitan.

The specimens are ochraceous with brown stems, the pores appear to be elongate-angular but owing to extreme flattening in the press their normal form is uncertain.

Polystictus affinis (Bl. & Nees) Fr. in Nov. Act. Reg. Soc. Sci. Upsal. Ser. 3, i: 75 (1851).

Polyporus affinis Bl. & Nees in Nov. Act. Phys.-med. Acad. Caes. Leop.-Carol. Nat. Cur. xiii: 18, t. 4 (1826).

NEPAL: Samela, 2,100 m.; on fallen tree-trunk; 15 Oct. 1952, *Polunin, Sykes & Williams* 5689.

Distribution: recorded from India, Sumatra, Java, Australia, the Phillipines and Brazil.

Polystictus cinnamomeus (Pers.) Sacc., Syll. vi: 210 (1888).

Polyporus cinnamomeus Pers., Myc. Eur. ii: 41 (1825).

P. perennis forma *cinnamomeus* (Pers.) Pilát, Atl. Champign. Eur. iii: 582 (1936).

NEPAL: Between Rohagoan and Lulo Khola, Sulik Gad, 3,000 m.; in leaf mould of mixed forest; 15 Sept. 1952, *Polunin, Sykes & Williams* 3410.

Spores yellow, globose to subglobose $5-7 \times 6-8 \mu$.

Distribution: America, Europe, India and Nepal.

Polystictus velutinus (Fr.) Cooke in Grevillea xiv: 83 (1886).

Polyporus velutinus Fr., Syst. Myc. i: 368 (1821).

S.E. TIBET: Pome, Gyadzong, Yigrong Chu, 2,420 m.; on dead wood in pine forest; 29 Jan. 1947, *Ludlow, Sherriff & Elliot* 12190.

Distribution: cosmopolitan and frequently recorded from India.

Cooke's name has been retained for these coriaceous, thin, velvety specimens to distinguish them from the thicker, softer *Trametes pubescens* (Fr.) Pilát. Pilát includes both forms under the latter name.

Trametes abietina (Fr.) Pilát, Atl. Champign. Eur. iii: 273 (1936).

Polyporus abietinus Fr., Syst. Myc. i: 370 (1821).

NEPAL: Between Samela and Dhaulakot, 2,550 m.; on trunk of dead *Tsuga* sp.; 5 Apr. 1952, *Polunin, Sykes & Williams* 3849.

S.E. TIBET: Takpo, Lenda, Tsangpo valley, 3,480 m.; on *Larix mastersiana* Rehd. & Wils.; 21 May 1938, *Ludlow, Sherriff & Taylor* 4379.

Distribution: common in the temperate zone of the northern hemisphere as well as in the Himalayas.

Fine large specimens. Hymenium varying from cinnamon to fuscous. Microscopical details are identical with those of European representatives.

Trametes pubescens (Fr.) Pilát, Atl. Champign. Eur. iii: 263 (1936).

Polyporus pubescens Fr., Syst. Myc. i: 367 (1821).

NEPAL: Suli Gad, below Lulo Khola, 3,600 m.; on trunk of dead tree; 16 Sept. 1952, *Polunin, Sykes & Williams* 3457.

Distribution: also known from N. America, Europe, Asia Minor.

A variable species (*vide* note under *Polystictus velutinus*).

Trametes heteromorpha (Fr.) Bres. apud Neuman in Wisc. Geol. & Nat. Hist. Surv. Bull. xxxiii: 40 (1914).

Daedalea heteromorpha Fr., Syst. Myc. i: 340 (1821).

NEPAL: Gad Rangchi, 1,650 m.; on dead tree-trunk; 16 Oct. 1952, *Polunin, Sykes & Williams* 5756.

Distribution: cosmopolitan.

Trametes versicolor (Fr.) Pilát, Atl. Champign. Eur. iii: 261 (1936).

Polyporus versicolor Fr., Syst. Myc. i: 368 (1821).

S.E. TIBET: Pome, Gyadzong, Yigrong Chu, 2,590 m.; on dead wood in pine forest; 23 Jan. 1947, *Ludlow, Sherriff & Elliot* 12177.

NEPAL: near Hurikot, 3,000 m.; on dead tree stump; 25 Sept. 1952, *Polunin, Sykes & Williams* 5408.

Distribution: cosmopolitan. Frequently recorded from the Himalayas and Peninsular India.

Stereum hirsutum Fr., Epicr. Syst. myc.: 549 (1838).

S.E. TIBET: Takpo, Lenda, Tsangpo valley, 3,300 m.; on wood; 8 May 1938, *Ludlow, Sherriff & Taylor* 4176.

Distribution: this cosmopolitan species has previously been recorded from the Himalayas and elsewhere in India.

Stereum lobatum Fr. Epicr. Syst. Myc.: 547 (1838).

BHUTAN: Takila, 1,800 m.; on rotting tree-trunk; 1 Oct. 1949, *Ludlow, Sherriff & Hicks* 21277.

Distribution: frequently recorded from the southern hemisphere including India.

Stereum purpureum Fr., Hymenomyc. Eur.: 639 (1874).

S.E. TIBET: Pome, Gyadzong, Yigrong Chu, 2,400 m.; in forest of *Quercus*, *Ilex* and pine; 26 Jan. 1947, *Ludlow, Sherriff & Elliot* 12184.

Distribution: this world-wide species has been recorded from Darjeeling and elsewhere in India.

Hymenochaete mougeotii (Fr.) Cooke in Grevillea viii: 147 (1880).

Thelephora mougeotii Fr., Elench. Fung.: 188 (1828).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,850 m.; fairly common on trees and boulders; 6 Jan. 1947, *Ludlow, Sherriff & Elliot 12068*.

Distribution: this world-wide species has previously been recorded from E. Nepal and Sikkim.

Tremella frondosa Fr., Syst. Myc. ii: 212 (1822).

S.E. TIBET: Pome, Yigrong Tso, 2,400 m.; on tree-trunk in pine forest; 12 Feb. 1947, *Ludlow, Sherriff & Elliot 12202*.

Distribution: N. & S. America, Europe, China and Tasmania.

Tremella mesenterica Fr., Syst. Myc. ii: 214 (1822).

S.E. TIBET: Kongbo, above Sang, Tsangpo valley, 3,150 m.; 25 June 1938, *Ludlow, Sherriff & Taylor 4988*.

Distribution: cosmopolitan.

Hirneola tenuis (Lév.) Sacc., Syll. vi: 769 (1888).

Exidia tenuis Lév. in Ann. Sci. Nat. Sér. 3, Bot. ii: 219 (1844).

S.E. TIBET: Pome, Sangyu, Yigrong Chu, 2,100 m.; on old wood in wet forest; 14 Jan. 1947, *Ludlow, Sherriff & Elliot 12149*.

Distribution: East Indies and Tibet.

Exobasidium pieridis P. Henn. in Engl. Bot. Jahrb. xxx: 38 (1902).

NEPAL: Tilyapato between Bartha Lagna and Karnali, 1,710 m.; on leaves of *Lyonia* (*Pieris*) *ovalifolia*; 23 Apr. 1952, *Polunin, Sykes & Williams 1939*.

Distribution: previously known from N. India and was originally described from Japan on the same host. *E. fawcettii* Massee (in Bull. Misc. Inf. Kew, 1908: 217 (1908)) on leaves of *Lyonia jamaicensis*, in Jamaica is probably a synonym.

Amylaria Corner, gen. nov.

Receptacula clavarioidea erecta applanato-ramosa subcoriacea, ad terram vel ad lignum putridum: sporis albis, amyloideis, late ellipsoideis, tunica paullum incrasata, uniguttatis: cystidiis nullis: hyphis subdimiticis, aliis fibulato-septatis et vix inflatis, tenue tunicatis, ramosis, aliis crasse tunicatis, haud septatis, sparsim ramosis, longitudinalibus vel intertextis, sed multis ut cellulis modo elongatis intercalaribus hypharum alterarum: species unica, *A. himalayensis*.

A. himalayensis Corner, sp. nov. (Fig. 1.)

Ad 10 cm. alta, caespitosa laxe pluries (3-6) ramosa, alba vel subcervina, sicca ochraceo-alutacea apices versus brunnescens, ex integro in plano unico divisa, inferne multifida axillis flabellatis 5-13 mm. latis, superne bifida, ramulis obtusis dein attenuatis, filiformibus vel ligulatis, 1 mm. latis: stipite ad 30 × 3-5 mm.: hymenio

amphigeno vel ad ramos obliquos inferiori: interdum e parte resupinato, -6 cm. lato, 1 mm. crasso, fertili evoluta. Sporae $5\text{--}6.5 \times 4.5\text{--}5.2 \mu$, hyalinae, subglobosae vel late ellipsoideae, dense et tenuiter echinulatae vel cristatae spinulis et cristis $0.5\text{--}1 \mu$ altis, apiculo 1μ longo, amyloideae tunica brunnea spinulis et cristis atrocyaneis. Basidia



FIG. 1. *Amylaria himalayensis* Corner.
Showing a branch of a fruit-body (nat. size) and spores from Ludlow & Sherriff 974.

$35\text{--}50 \times 7\text{--}8 \mu$, clavata vel subventricosa, projicientia, ad basin $2\text{--}3 \mu$ lata: sterigmata (2-) 4, $5\text{--}7 \mu$ longa. Hymenium ad 200μ incrassatum, subhymenio laxe intertexto. Hyphae fibulato-septatae $2\text{--}8$ (-10) μ latae, saepe subfasciculatae: hyphae alterae $2\text{--}4$ (-5) μ latae, tunicis ad 1μ crassis, vel ut cellulae intercalares hypharum fibulato-septatarum ad 7μ latae et crasse tunicatae, angustiores in hymenium pervadentes.

Ad terram inter muscos in silva montana vel ad lignum putridum in excavatione ad basim trunci arboris.

NEPAL: Dhotbas, south of Chakure Lekh, 2,800 m.; 12 Oct. 1952, Polunin, Sykes & Williams 5561.

BHUTAN: Rocha Chu valley, Trashiyangsi, 3,000 m.; 21 Sept. 1934, Ludlow & Sherriff 974. (Herb. Brit. Mus., holotype).

This fungus is the proof of a new clavarioid series which I have suspected for some time. Its affinity is with *Hericium* of the *Hydnaceae*. The two genera have in common the amyloid spore of very uniform size and shape: no other clavarioid genera have amyloid spores. It may seem trifling, but this is the clue which connects the erect, flabellately branched fruit-bodies of *Amylaria* with the horizontal and decurved ones of *Hericium*. The spines of *Hericium* are, in fact, the positively geotropic branchlets of a clavarioid fruit-body, and *Hericium* stands to *Amylaria* as *Deflexula* to *Pterula*.

Fruit-bodies of *A. himalayensis* resemble forms of *Scytinopogon angulisporus* (Pat.) Corner, with flabellate branching. The hyphae, however, are imperfectly dimitic, as in *Pterula*. The larger, thick-walled hyphae resemble skeletal hyphae, but they are

merely the very elongate segments of the clamped, or generative, hyphae. But, from these generative hyphae, which at first compose the mass of the tissue, there grow out many narrow, thick-walled hyphae weaving between the others and extending into the thickening hymenium in the manner of more or less unbranched binding hyphae. Thus, the tissue becomes felted and subcoriaceous, unlike that of the pteruloid genera in which the thick-walled hyphae are strictly longitudinal. The Nepal collection reveals that the fruit-bodies may arise from a resupinate, but fertile, *Corticium*-like patch, which has the same dimitic construction.

The spores resemble those of *Polyporus berkeleyi* Fr. and *P. montanus* (Quél.) R. Ferry, which are placed by Singer in his genus *Bondarzewia*. The echinulate character may be generic in *Amylaria*. The spores of *Hericium* are mostly smooth, but slight indications of asperities occur in some species. The gloecystidia of *Hericium* are lacking from *Amylaria*, as they are from *Bondarzewia*. This genus has, also, the dimitic construction of *Amylaria*, which *Hericium* lacks. These three genera, clavarioid, hydroid and polyporoid, show remarkable resemblance and suggest that in the Himalayan region, which I have long regarded as the most critical in the world for systematic mycology, connexions will be found with *Lactarius*, *Russula* and the asterosporous Gasteromycetes. (E. J. H. C.)

***Clavariadelphus mirus* (Pat.) Corner, Monogr. Clavaria: 279 (1950).**

Clavaria mira Pat. in Bull. Soc. Myc. Franc. xxiii: 71 (1907).

NEPAL: Deoli Patan, south-east of Jumla, 3,800 m.; in oak-bamboo-conifer forest; 4 Sept. 1952, *Polunin, Sykes & Williams 3144*.

Up to 20 cm. $\times$ 6–12 mm., erect, cylindric to subclavate or cigar-shaped, apparently solitary but gregarious, the apex slightly tapered, rounded obtuse, hymenium subrugulose, 'light brown or fawn': stem 7 cm. long, immersed in the humus: spores 10–13 (–14) $\times$ 6.5–8.5 μ , as in *C. pistillaris* (Fr.) Donk, apiculus 1–1.5 μ : basidia 100–120 $\times$ 10–12 μ , with long flexuose base, sterigmata 2–4, 8–11 μ long: hymenium thickening, cystidia none: hyphae 15 μ wide, clamped, thin-walled, long-celled, containing much oil.

Distribution: the only collection of this species, hitherto, is from Indo-China.

Patouillard described the spores as 8–10 $\times$ 4–5 μ , which are smaller than in the Nepal collection, but they may have been immature: there is also a clear error in his description of the basidia. The species is near *C. pistillaris* but is much narrower, relatively taller, and brown. Thus, it recalls large specimens of *C. fistulosus*, but the fruit-bodies of *C. mirus* have the solid construction of *Eu-clavariadelphus* (E. J. H. C.)

***Clavariadelphus sachalinensis* (Imai) Corner, Monogr. Clavaria: 282 (1950).**

Clavaria sachalinensis Imai in Trans. Sapporo Nat. Hist. Soc. xi: 73 (1930).

Up to 8 cm. high, elongate clavate, drying brownish ochraceous: spores 16–20 $\times$ 5–5.5 μ , cylindric, thin-walled, colourless, aguttate: basidia c. 100 $\times$ 10 μ : hyphae up to 10 μ wide clamped, thin-walled.

S.E. TIBET: Tsanang La, near Paka, 3,200 m.; in moss under *Abies*-forest; 20 July 1938, *Ludlow, Sherriff & Taylor 5881*.

Distribution: this is the first authentic record of the species outside Japan, though it probably occurs in North America.

The larger spores and basidia, as well as the more intense colour of the fruit-body, distinguish the species from its close ally *C. ligula* (Fr.) Donk. (E. J. H. C.)

***Ramaria fuscobrunnea* Corner, sp. nov.**

Ramaria flaccidae et *R. invalii* valde affinis, sed receptaculis majoribus, sordide brunneis.

Ad 11 cm. alta, caespitosa, multum ramosa, stipite vix evoluto, brunnea, dein fuscuscentia, sicca griseo-brunnea vel fusca: ramis inferne 5–8 mm. latis et polychotomis, superne gradatim angustioribus, apicibus 1 mm. latis, internodis plus minus elongatis 15 mm. longis. Sporae 6.5–10 × 3.5–4 μ , raro 11 × 5 μ vel 12 × 3.5 μ , brunneo-ochraceae, anguste pyriformes vel subcylindricae, tenue echinulae spinulis hyalinis 0.5–1 μ longis. Hyphae ad 12 μ latae, fibulatae, tenue tunicatae, plerumque ad septa hypharum longitudinalium ampullata.

NEPAL: Tarakot, 3,400 m.; under *Picea*; July 1952, *Polunin, Sykes & Williams 2635*.

S.E. TIBET: Valley above Sang, 3,200 m.; on humus under *Quercus-Ilex* forest; 26 June 1938, *Ludlow, Sherriff & Taylor 4988b*. (Herb. Brit. Mus., holotype). (E. J. H. C.)

***Ramaria subaurantiaca* Corner, sp. nov.**

Ramaria flavae affinis, sporis brevioribus, colore subaurantiaco. An *R. rufescens* sensu Bresadola?

Ad 10 cm. alta, multum ramosa, crocea ('saffron'), sicca sordide brunneo-ochracea: stipite ad 5 cm. × 8–12 mm., distincto, sicco rufescenti: ramis crassis polychotomis, ramulis obtusis dichotomis congestis. Sporae 9–11.5 × 4.7–6 μ , ochraceae, ellipsoideae, ruguloso-subverrucosae, obtusae, uniguttatae. Hyphae ad 16 μ latae, haud fibulatae, tunicis tandem paulum incrassatis: hymenio haud incrassato.

S.E. TIBET: Kongbo, Shoga Dzong, 3,200 m.; on earth under *Berberis*; 22 July 1947, *Ludlow & Sherriff 14183*. Kongbo, Deyang La, 3,150 m.; on rotting branches; 7 Aug. 1947, *Ludlow & Sherriff 1421*. (Herb. Brit. Mus., holotype). (E. J. H. C.)

***Ramariopsis kunzei* (Fr.) Donk var. *deformis* Corner, Monogr. Clavaria: 641 (1950).**

Spores 5–5.5 × 4.5–5 μ , white, subglobose, echinulate with spines 0.5 μ long: hymenium-thickening strong, containing thick-walled abortive basidia with 0–4 sterigmata, their walls up to 3 μ thick: hyphae up to 12 μ wide, clamped.

S.E. TIBET: Kongbo, Pangkar, 4,000 m.; in dry grass; 7 Sept. 1947, *Ludlow & Sherriff 15691*.

The field-note 'light brown' refers, probably, to the dried-up fruit bodies.

Distribution: Europe apart from the present record. (E. J. H. C.)

Calocera viscosa Fr., Syst. Myc. i: 486 (1821).

E. BHUTAN: Rocha Chu valley, Trashiyangsi, 3,200 m.; 'bright deep orange yellow', up to 12 cm. high; 21 Sept. 1934, *Ludlow & Sherriff* 973.

S.E. TIBET: Kongbo, Deyang La, 3,200 m.; on decaying wood, 'very rich orange', up to 7 cm. high; 7 Aug. 1947, *Ludlow, Sherriff & Elliot* 14242.

Spores (in both collections) $7.5-10 \times 4-5 \mu$, hyaline, aseptate.

Distribution: America, W. Indies, Europe and Asia including India and the present records. (E. J. H. C.)

GASTEROMYCETES

Astraeus hygrometricus (Pers.) Morg. in Journ. Cincinnati Soc. Nat. Hist. xii: 20 (1889).

Geastrum hygrometricum Pers., Synops. Meth. Fung. i: 135 (1801).

NEPAL: Chaudhabise Khola, 3,000 m.; in dryish soil under *Pinus*; 20 May 1952, *Polunin, Sykes & Williams* 983.

Distribution: previously known from N. America, Europe, India and Australia.

Geastrum triplex Jungh. in Tijdschr. Nat. Ges. Physiol. vii: 287, t. 8, figs. 1-3 (1840).

NEPAL: Lulo Khola, 3,900 m.; in leaf soil of coniferous forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3447.

Distribution: cosmopolitan.

Disciseda cervina (Berk.) Hollós in Növényt. Közlem. i: 107 (1902).

Bovista cervina Berk. in Ann. & Mag. Nat. Hist. ix: 447 (1842).

NEPAL: Durpa, north of Margor Lagna, 2,700 m.; on bare patches of loose, dry, gritty soil between clumps of thyme and bracken; 26 May 1952, *Polunin, Sykes & Williams* 4179.

Distribution: North America, Europe, India, Australia and New Zealand.

The spores are $5-6 \mu$ diam. and coarsely warted. *D. verrucosa* G. H. Cunningham described from Australia, as well as certain other species, will doubtless prove synonymous when the genus can be critically examined.

Lycoperdon atropurpureum Vitt., Monogr. Lycoperd.: 42 (1842).

NEPAL: Maharigaon, 4,500 m.; on peaty grass slopes; 20 July 1952, *Polunin, Sykes & Williams* 225.

Distribution: America, Europe and Nepal.

Dark purplish brown turbinate specimens, surface granules probably worn away. Spores purplish brown, $4.5-6.5 \mu$ including 1μ long spines. Capillitium brown.

Lycoperdon caelatum Fr., Syst. Myc. iii: 32 (1829).

NEPAL: Dozam Khola, below Kharchyun, near Simikot, 3,750 m.; on surface of slopes of grass and *Rumex*; 1 June 1952, *Polunin, Sykes & Williams* 4284.

Distribution: America, Europe, Africa, India, Australia.

Lycoperdon perlatum Pers., Synops. Meth. Fung. i: 149 (1801).

S.E. TIBET: Pome, Tongkyuk Dzong, 2,850 m.; in moss among rhododendron and pine; 1 Jan. 1947, *Ludlow, Sherriff & Elliot* 12055.

Distribution: cosmopolitan.

Lycoperdon pyriforme Pers., Synops. Meth. Fung. i: 148 (1801).

NEPAL: Suli Gad, below Lulo Khola, 3,600 m.; on soil and dead wood in mixed forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3455.

Distribution: cosmopolitan.

Mitremyces junghuhnii Schlecht. & Müll. in Bot. Zeit. 1844: 401, t. 3B (1844).

S.E. TIBET: Monyul, Gyipu, Nyam Jang Chu, 2,500 m.; on damp soil in dense forest; 24 March 1936, *Ludlow & Sherriff* 1229.

Distribution: Sikkim, Bhutan, S.E. Tibet and East Indies.

Crucibulum vulgare Tul. in Ann. Sci. Nat. Sér. 3. Bot. i: 90 (1844).

S.E. TIBET: Kongbo, Molo, 3,300 m.; on old wood; 21 May 1938, *Ludlow, Sherriff & Taylor* 4380.

Distribution: cosmopolitan. In India previously recorded from the Nilgiris.

Cyathus lesueurii Tul., in Ann. Sci. Nat. Sér. 3. Bot. i: 79 (1844).

NEPAL: Jumla, 3,000 m.; in earth banks under pine; 8 Aug. 1952, *Polunin, Sykes & Williams* 394. Jumla, 2,280 m.; on bare stoney patch of soil, when unripe resembling the smaller stones; 4 July 1952, *Polunin, Sykes & Williams* 4436.

Distribution: known from America and Australia.

The present representatives of this species are quite typical: smooth, discoid, blackish sporangioles; large spores $25-35 \times 20-25 \mu$.

UREDINALES

Aecidium circaeae Ces. & Mont. in Syll. Crypt.: 312 (1856).

NEPAL: Chutta, south-east of Jumla, 3,300 m.; on *Circaea alpina* L.; 25 July 1952, *Polunin, Sykes & Williams* 4976.

Distribution: previously known from Europe, Siberia, Japan.

Aecidium cunninghamianum Barclay in Journ. As. Soc. Bengal ix, 2: 224 (1891).

NEPAL: Chaurkot, south-east of Jumla, 3,000 m.; on leaves of *Cotoneaster* sp.; 27 Sept. 1952, *Polunin, Sykes & Williams* 5431.

Distribution: previously only known from Punjab (Simla).

Arthur and Cummins (1933) record *Gymnosporangium cunninghamianum* Barclay on *Cotoneaster bacillaris* from Landour, Mussoorie. Barclay thought that his *Aecidium cunninghamianum* might be a stage of this *Gymnosporangium* but Sydow (Mono. Uredin. iv: 224 (1924)) considers this unlikely. The Nepal collections on *Pyrus* (vide *Gymnosporangium cunninghamianum*) and *Cotoneaster* respectively, support Sydow's view that the two are quite distinct. The peridial cells and aecidiospores on *Pyrus* (= *Gymnosporangium cunninghamianum*) are considerably larger than those on *Cotoneaster* (*Aecidium cunninghamianum*).

Aecidium infrequens Barclay in Journ. As. Soc. Bengal lix, 2: 105 (1890).

NEPAL: Thakurji Lekh, south of Jumla, 3,450 m.; on leaves of *Geranium* sp.; 18 July 1952, *Polunin, Sykes & Williams* 4765.

Distribution: previous records from Punjab and Kashmir.

Aecidium montanum Butler in Indian Forester xxxi: 676 (1905).

NEPAL: Dozam, near Simikot, 2,550 m.; on leaves of *Berberis chitria* Lindl.; 28 May 1952, *Polunin, Sykes & Williams* 2644.

Distribution: several previous collections on *Berberis* spp. in the Himalayas (Mussoorie, Jaunsar, Kashmir).

Aecidium pleurospermae Balfour-Browne, sp. nov.

Pycnidiis epiphyllis: aecidiis hypophyllis, vel petiolicolis, maculis aurantiis insidentibus, in greges rotundatos 3–5 mm. diam., vel ad petiolos elongatos dispositis, cupulatis, margine inciso: aecidiosporis globoso-angulatis vel ellipsoideis, subtiliter verruculosi, subhyalinis $18-25 \times 14-20 \mu$.

NEPAL: Chakure Lekh, 3,600 m.; on leaves of *Pleurospermum* sp.; 17 July 1952, *Polunin, Sykes & Williams* 4742. (Herb. Mus. Brit., holotype).

Differs only in the colour of the spots and in the host from the *Aecidium saniculae* described by Barclay (Journ. As. Soc. Bengal, lvi, 2: 352 (1888)) on *Sanicula*. P. & H. Sydow (Monogr. Uredin. i: 414 (1904)) suggested that Barclay's *Aecidium* might belong to *Puccinia saniculae* Grev.

Aecidium rhododendri Barclay in Sci. Mem. Med. Off. Army Ind. vi: 71–74 (1891).

Aecidium sino-rhododendri M. Wils. in Not. R. Bot. Gard. Edinb. xii: 261 (1921).

NEPAL: Thakurji Lekh, south of Jumla, 3,450 m.; on leaves of *Rhododendron campanulatum* D. Don; 18 July 1952, *Polunin, Sykes & Williams* 4767. Maharigaon (5 miles north-east), 4,200 m.; on leaves of *Rhododendron campanulatum*; 22 July 1952, *Polunin, Sykes & Williams* 280.

Distribution: this Nepal fungus is identical with the *Aecidium* described by Barclay on the same species of *Rhododendron* from Simla and referred to by name in his diagram on p. 74. Wilson's *Aecidium sino-rhododendri* on *R. calvescentes* Balf. f. & Forrest from S.E. Tibet is an undoubted synonym.

Aecidium urceolatum Cooke in Grevillea vii: 61 (1878).

NEPAL: Bhurchula Lekh, near Jumla, 4,200 m.; on *Thalictrum* sp.; 13 July 1952, *Polunin, Sykes & Williams* 4621.

S.E. TIBET: Kongbo, Sang, Tsangpo valley, 2,850 m.; on *Thalictrum minus* L.; 26 June 1938, *Ludlow, Sherriff & Taylor* 4991.

Distribution: previously recorded from Kanawar and Punjab.

Sydow (Monogr. Uredin. i: 826 (1904)) considers this close to the aecidial stage of *Puccinia persistens* Plowr.

Chrysomyxa himalense Barclay in Sci. Mem. Med. Off. Army Ind. v: 83, tt. 1, 2 (1890).

NEPAL: Between Chankheli Lagna and Darma, 3,300 m.; on petioles of *Rhododendron* sp.; 20 May 1952, *Polunin, Sykes & Williams* 4140.

S.E. TIBET: Kongbo, Molo, 3,150 m.; on leaves of *Rhododendron vellereum* Hutch.; 19 May 1938, *Ludlow, Sherriff & Taylor* 4324.

Distribution: India and S.E. Tibet.

In the specimen cited, the fungus is confined to the under surface of the leaves, whereas, previously, it has been recorded as occurring on or near the petioles and veins. The Tibetan specimens also differ from the type in having teleutosori with long stalks up to 2 mm. in length which give the fungus the appearance of a golden yellow *Stilbum*. The elongated stalks may be an adaptation to raise the spores above the thick tomentation of the leaves of this species of *Rhododendron*.

Chrysomyxa taghishae Balfour-Browne, sp. nov. (taghisha = Nepalese for *Rhododendron*).

Soris teleutosporis hypophyllis non in ramalis, 0.4–0.7 mm. diam., dense confertis, confluentibus subinde majoribus, rotundatis vel elongatis, pulvinatis, aureis vel aureo-brunneolis: teleutosporis in catenas 80–120 μ longas oriundis, oblongis 8–12 $\times$ 20–24 μ : promycelis curvatis circ. 20 $\times$ 8 μ : sporidiis aureis, rotundatis 8–12 μ .

NEPAL: near Babaria Lekh (Tibrikot–Jumla), 3,300 m.; on leaves of dwarf *Rhododendron*; 29 July 1952, *Polunin, Sykes & Williams* 2121. (Herb. Brit. Mus., holotype).

Differs from *C. himalense* Barclay in having the sori quite sessile, frequently confluent and occurring on the lower epidermis of the leaves and apparently not at all on the petioles, fruits or branches.

The fungus distributed by Jaczewski, Komarov & Tranzschel (*Fungi Rossiae* exs. No. 324) under the name *C. rhododendri* De Bary. is undoubtedly identical with the Nepal species; its teleutosori differ from those of authentic *C. rhododendri* in being more abundant, thicker and often confluent. Microscopically there is no noteworthy difference in size of teleutospore chains, teleutospores or sporidia in either *C. himalense* or *C. taghishae*, or yet in *C. dietelii* described by Sydow from Kumaon. This last has very sparse, small sori, 0.1–0.2 mm. diam. (Sydow in Ann. Myc. v: 502 (1907)).

The teleutosori of *Chrysomyxa* spp. on Asiatic *Rhododendron* spp. form a series showing a gradual difference in size from the small, sessile *C. dietelii*, through the

somewhat larger, still sessile, *C. taghishae* and the shortly-stalked forms of *C. himalense*, from Simla and Nepal, to the large, long-stalked Tibetan forms of this latter species. Experimental work can only decide whether these forms do, in fact, represent distinct species or merely growth responses to different species of host plant.

Coleosporium campanulae (Pers.) Winter in Rabenh., Krypt.-Fl. i, 1: 246 (1881).

Uredo campanulae Pers., Synops. Meth. Fung. i: 217 (1801).

NEPAL: Sarda Khola, 105 m.; on leaves of *Campanula colorata* Wall.; 28 March 1952, *Polunin, Sykes & Williams* 3708.

Distribution: America. Europe, Japan and very commonly recorded in India.

cf. **Gymnosporangium clavariaeforme** DC., Flor. Franc. ii: 217 (1805).

NEPAL: Pudamigaon, Dojam, Khola, 3,600 m.; on fruits of *Cotoneaster* sp.; 22 Sept. 1952, *Polunin, Sykes & Williams* 3546.

Distribution: N. America, Europe, Algeria. This species has not previously been recorded from Asia, nevertheless the present fungus agrees very closely with it.

Gymnosporangium cunninghamianum Barclay in Sci. Mem. Med. Off. Army Ind. v: 78, tt. 1-3 (1890).

NEPAL: Mugu Karnali valley, between Daura and Mangri, 2,400 m.; on leaves of *Pyrus* sp.; 25 Aug. 1952, *Polunin, Sykes & Williams* 3032.

Distribution: this species was originally described by Barclay (Journ. As. Soc. Bengal lvi, 2: 370 (1887)) from *Pyrus variolosa* Wall. under the name '*G. clavariaeforme* Jacq.'. He realized later that it represented a distinct species. It has since been recorded from several localities in India including the Himalayas.

Gymnosporangium padmarensae Balfour-Browne, sp. nov. (Fig. 2.)

Pycnidiis et aecidiis ignotis. Soris teleutosporiferis ramicolis, cylindraceis 4-8 mm. longis, 2-3 mm. latis, vel pulvinatis, castaneo-brunneis: teleutosporis lineari-fusiformibus, apice leniter attenuatis, 1-septatis, non constrictis, basi attenuatis, aurantiis, 130-200 × 15-18 μ : episporio 1 μ crasso: pedicello hyalino, cylindraceo, longissimo.

NEPAL: Padmara, 2,850 m.; on branches of *Juniperus indica* Bertol.; 13 May 1952, *Polunin, Sykes & Williams* 4075. (Herb. Brit. Mus., holotype).

Resembles *G. ellisii* (Berk.) Farl. in Ellis, N. Am. Fungi: 271 (1879), in having very elongate fusiform teleutospores. In the Nepal species, however, these are even longer and are 1-septate, never 2- or 3-septate.

Melampsora helioscopiae (Schumach.) Wint. in Pilze Deutschl.: 240 (1881).

Uredo helioscopiae Schumach., Enum. Pl. ii: 229 (1803).

NEPAL: Pina, near Rara, 2,400 m.; on leaves of *Euphorbia* sp.; 14 May 1952, *Polunin, Sykes & Williams* 4085.

Distribution: N. America, Europe, Abyssinia and India.

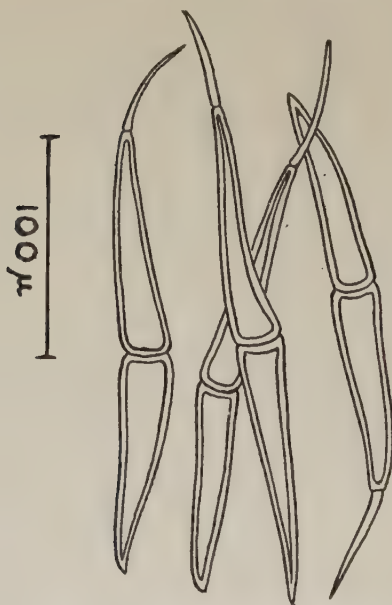


FIG. 2. *Gymnosporangium padmarensis* Balfour-Browne.
Teleutospores from Polunin, Sykes & Williams 4075.

Melampsora magnusiana G. Wagner in Oester. Bot. Zeitschr. xlv: 273 (1896).

[*Caeoma fumariae* Link in L., Sp. Pl., ed. 4, vi, pt. 2: 24 (1825), *stat. imperf.*]

Caeoma chelidonii P. Magn. in Hedwigia xiv: 20 (1875).

NEPAL: Bhurchula Lekh, near Jumla, 3,600 m.; on leaves of *Meconopsis* sp.; 15 July 1952, Polunin, Sykes & Williams 4697. Thakurji Lekh, south of Jumla, 4,200 m.; on *Corydalis* sp.; 16 July 1952, Polunin, Sykes & Williams 4716.

Distribution: hitherto recorded on various *Papaveraceae*, in Europe and Russia.

Melampsora sp.

NEPAL: Thakurji Lekh, south of Jumla, 3,450 m.; on leaves of *Saxifraga moorcroftiana* Wall.; 18 July 1952, Polunin, Sykes & Williams 4764.

Aecidia amphigenous, scattered over the whole leaf, circular, 0.5–1 mm. diam.: aecidiospores irregularly angular-globose, hyaline, densely verruculose, $17\text{--}26 \times 14\text{--}17 \mu$: epispore $2\text{--}3 \mu$ thick.

Melampsora has not previously been recorded on *Saxifraga* from the Himalayas. As only the *Caeoma* stage is represented (and this is not distinctive in the various spp. of *Melampsora* on this host from other parts of the world) identification must wait until this can be related to its teleutospore stage.

Ochropsora ariae (Fuck.) Syd., Monogr. Uredin. iii: 661 (1915).

Melampsora ariae Fuckel, Symb. Myc.: 45 (1869).

[*Aecidium leucospermum* DC. in Lam. & DC., Fl. Franç., ed. 3, ii: 239 (1805), *stat. imperf.*]

NEPAL: Jumla, 2,250 m.; on leaves of *Anemone rivularis* Buch.-Ham., growing on terrace cultivation banks; 4 May 1952, *Polunin, Sykes & Williams* 904.

This fungus appears to be identical with that found by Barclay (Journ. As. Soc. Bengal lvi, 2: 361 (1887)) on the same host in Simla and identified by him provisionally as *Aecidium leucospermum* DC. Since then *A. leucospermum* from *Anemone nemorosa* L. in Europe has been related experimentally to a teleutospore stage on species of *Pyrus*, *Aria*, *Malus* and is referred to as *Ochropsora ariae* (Fuck.) Syd. (= *Ochropsora sorbi* (Oud.) Diet.). Morphologically, the Himalayan aecidia are identical with those on *A. nemorosa* but final identification cannot be made until the life-history of the Himalayan fungus has been determined. Arthur & Cummins (in Mycologia xxv: 400 (1933)) record *Ochropsora sorbi* (Oud.) Diet. on an *Anemone* from the states of Chamba and Alwar.

Peridermium orientale Cooke in Indian Forester iii: 91 (1877).

NEPAL: Sallyana, 1,500 m.; on needles of *Pinus roxburghii* Sarg.; 29 March 1952, *Polunin, Sykes & Williams* 5948.

BHUTAN: Kinga Rapden, 1,500 m.; on needles of *Pinus roxburghii*; 3 April 1949, *Ludlow, Sherriff & Hicks* 18609.

Distribution: previously known from India.

Recent studies on the life cycle of this rust by Bagchee (1941) indicate that the form of *Coleosporium campanulae* (Pers.) Wint. occurring on *Campanula colorata* is the alternate stage.

Peridermium thomsoni (Berk.) Berk. apud Cooke in Indian Forester iii: 94 (1877).

Aecidium thomsoni Berk. in Gard. Chron. 1852: 627 (1852).

NEPAL: Simikot, 2,850 m.; on *Picea* sp.; 6 June 1952, *Polunin, Sykes & Williams* 4293. Barbung Khola, near Tachungaon, 3,450 m.; on *Picea*; 4 June 1952, *Polunin, Sykes & Williams* 1067.

Distribution: previous records are from Simla and Sikkim on *Picea smithiana* (Wall.) Boiss.

The Nepal specimens show magnificent development of the rust which has infected all the needles of large branches thus producing a striking appearance.

Puccinia sp. cf. **apii** Desm., Cat. Pl.: 25 (1823).

NEPAL: Chakure Lekh, south of Jumla, 3,600 m.; on leaves of *Selinum candollii* DC.; 17 July 1952, *Polunin, Sykes & Williams* 4741.

Distribution: Europe, India, Japan, Tasmania.

In the absence of authentic aecial material for comparison, the identification of this specimen must be regarded as tentative.

Puccinia chelonopsidis Balfour-Browne, sp. nov. (Fig. 3.)

Soris pallidis vel brunneis: teleutosoris hypophyllis, sparsis, atro-cinnamoneis,

pulverulentis, plus minusve orbicularis, 0.5–1 mm. diam.: teleutosporis immaturis hyalinis: teleutosporis maturis atro-castaneis, late ellipsoideis vel subglobosis, utrinque rotundatis, apice vel subapice leviter incrassatis, medio non vel vix contractis, verrucosis, $35\text{--}40 \times 28\text{--}32\ \mu$: episorio flavo, $3\text{--}4\ \mu$ crasso: pedicello hyalino, brevi, saepe oblique inserto, mox deciduo: uredosporae invisae.

In foliis vivis *Chelonopsisidis albiflorae* Pax. & K. Hoffm.

S.E. TIBET: Kongbo, Sumbatse, 3,150 m.; 4 Oct. 1938, Ludlow, Sherriff & Taylor 7174a. (Herb. Brit. Mus., holotype).

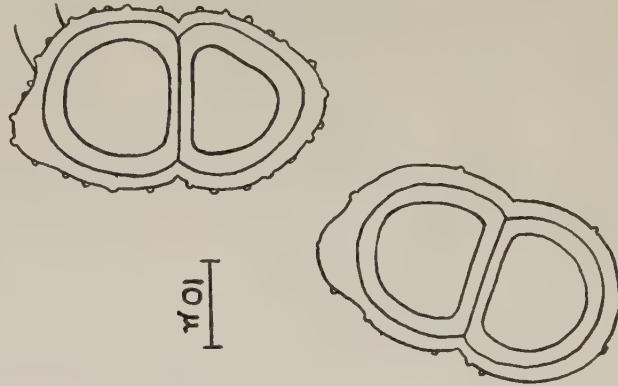


FIG. 3. *Puccinia chelonopsisidis* Balfour-Browne.
Teleutospores from Ludlow, Sherriff & Taylor 7174a.

This rust most closely resembles some of the thick-walled, verrucose species on *Salvias* from the United States and Mexico but, apart from differences in geography and habitat, it is distinguished by its caducous spores with their generally thicker and more coarsely warted epispore. *P. ziziphorae* Syd. from Kurdistan and Turkestan is another species with very similar teleutosori, but the spores are smaller and the epispore thinner than in the Tibetan fungus.

Puccinia coronata Corda, Ic. Fung. i: 6 (1837).

NEPAL: Jumla, 228 m.; on leaves and petioles of *Rhamnus procumbens* Edgew.; 5 July 1952, Polunin, Sykes & Williams 4463.

Distribution: cosmopolitan with many records from India.

Puccinia festucae Plowr. in Gard. Chron. Ser. 3, ii: 42 (1890).

NEPAL: Bhurchula Lekh, near Jumla, 3,600 m; aecidia on leaves of *Lonicera* sp.; 15 July 1952, Polunin, Sykes & Williams 4704.

Distribution: previously known from N. America, Europe, north-west Himalayas and Australia.

Puccinia gentianae (Strauss) Link in L., Sp. Pl. ed. 4, vi, pt. 2: 73 (1825).

Uredo gentianae Strauss in Ann. Wetter. Ges. ii: 102 (1811).

S.E. TIBET: Kongbo, Mira La, 2,940 m.; on leaves of *Gentiana tibetica* King ex Hook. f.; 11 Aug. 1938, *Ludlow, Sherriff & Taylor* 6113.

Distribution: previously known from America, Europe, Siberia and Simla.

Puccinia graminis Pers., Synops. Meth. Fung. i: 228 (1801).

NEPAL: Shumula, below Chankheli Lagna, 3,000 m.; on leaves of *Berberis aristata* DC.; 19 May 1952, *Polunin, Sykes & Williams* 4109.

Distribution: cosmopolitan.

Puccinia heraclei Grev., Scot. Crypt. Fl. i: t. 42 (1823).

NEPAL: Chakure Lekh, south of Jumla, 3,600 m.; on leaves of *Heracleum candicans* DC.; 17 July 1952, *Polunin, Sykes & Williams* 4740.

Distribution: Europe. Has been recorded from the Himalayas by Arthur & Cummins (in *Mycologia* xxv: 403 (1933)).

Pycnidia and aecidia are abundant on the present specimens.

Puccinia pimpinellae (Strauss) Martius, Prodr. Fl. Mosq. ed. 2: 226 (1817).

Uredo pimpinellae Strauss in Ann. Wetter. Ges. ii: 102 (1811).

NEPAL: Thakurji Lekh, south of Jumla, 3,450 m.; on *Acronema* sp.; 18 July 1952, *Polunin, Sykes & Williams* 4762.

Distribution: America, Europe, Algeria, Asia Minor, India.

Aecidial stage only represented.

Puccinia rupestris Juel in Bot. Notis. 1893: 56 (1893).

NEPAL: Chakure Lekh, south of Jumla, 3,600 m.; on *Saussurea hieracioides*; 17 July 1952, *Polunin, Sykes & Williams* 4739.

The aecidia and spores agree exactly with those of this species previously recorded only from Norway and Sweden where the teleuto and uredospore stages are said to occur on *Carex rupestris* All.

Puccinia taylorii Balfour-Browne, sp. nov. (Fig. 4.)

Uredosoris hypophyllis, sparsis, rotundatis, pulverulentis, ochraceis: uredosporis globosis, subtiliter echinulatis, flavis vel hyalinis, 18–20 μ diam., pedicello deciduo. Teleutosoris hypophyllis, maculis pallescentibus insidentibus, sparsis vel subgregariis, saepe confluentibus, globosis, pulverulentis, atrobrunneis: teleutosporis ovatis, oblongis vel subglobosis, apice non incrassatis, medio non vel leniter constrictis, ad apicem et/vel juxta septum papillae hyalinae gerentibus, subtiliter verruculosus, castaneo-brunneis, 16–20 $\times$ 20–28 μ : pedicello hyalino, brevissimo, mox deciduo.

In foliis vivis *Polygoni polystachyi* Wall.

S.E. TIBET: Kongbo, Lusha, Tsangpo valley, 2,850 m.; 18 Sept. 1938, *Ludlow, Sherriff & Taylor* 5462b. (Herb. Brit. Mus., holotype).

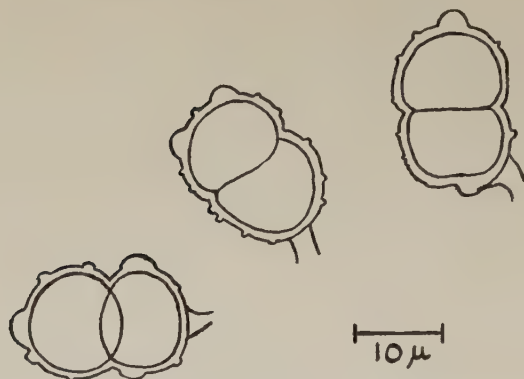


FIG. 4. *Puccinia taylorii* Balfour-Browne.
Teleutospores from Ludlow, Sherriff & Taylor 5462b.

Differs from *Puccinia bistortae* (Str.) DC. in its subspherical and slightly verrucose teleutospores and in bearing one or two hyaline lateral or subterminal papillae.

Puccinia violae (Schumach.) DC. in Lam. & DC. Fl. Franç. ed. 3, vi: 62 (1815).

Aecidium violae Schumach., Enum. Pl. ii: 224 (1803).

NEPAL: Thakurji Lekh, south of Jumla, 3,450 m.; on leaves of *Viola* sp.; 18 July 1952, Polunin, Sykes & Williams 4763. Durpa, north of Margor Lagna, 2,850 m.; on *Viola* sp.; 26 May 1952, Polunin, Sykes & Williams 4167.

Distribution: America, Europe, Siberia, India, Japan.

Uromyces hobsoni Vize in Grevillea iv: 115 (1876).

NEPAL: Sarda Khola, 1,200 m.; on *Jasminum* sp.; 27 Aug. 1952, Polunin, Sykes & Williams 1222.

Distribution: India, Somaliland, Cameroons.

USTILAGINALES

Cintractia minor (Clinton) Jackson in Mycologia xii: 153 (1920).

Cintractia axicola var. *minor* Clinton in Journ. Myc. viii: 143 (1902).

NEPAL: Marma Khola, 7,500 m.; on peduncles of *Cyperus* sp.; 18 Oct. 1952, Polunin, Sykes & Williams 5844.

Distribution: S. America and India.

Sphacelotheca fagopyri Syd. & Butl. in Ann. Myc. v: 486 (1907).

NEPAL: Ghurchi Lagna, Ghurchi Lekh, 3,000 m.; in flowers of *Fagopyrum* sp.; 28 Aug. 1952, Polunin, Sykes & Williams 3064.

Distribution: originally described from Kulu, Bengal.

Spores very finely verruculose, 11–14 μ diam.

Sphacelotheca hydropiperis (Schumach.) De Bary, Vergl. Morph. Biol. Pilze: 187 (1884).

Uredo hydropiperis Schumach., Enum. Pl. ii: 234 (1803).

NEPAL: Garjankot, nr. Jumla, 2,550 m.; in flowers of *Polygonum* sp.; 8 Oct. 1952, *Polunin, Sykes & Williams* 5511.

Distribution: cosmopolitan.

Sphacelotheca monilifera (Ellis & Everh.) Clinton in Journ. Myc. viii: 141 (1902).

Ustilago monilifera Ellis & Everh. in Bull. Torrey Bot. Cl. xxii: 362 (1895).

NEPAL: Between Phulchangi and Chong, near Tibrikot, 2,400 m.; in ovaries of *Heteropogon contortus* (L.) Beauv.; 11 Sept. 1952, *Polunin, Sykes & Williams* 3320.

Distribution: Previous records from Hawaii, Mexico, Arizona where it has been recorded on the same grass.

Ustilago crameri Körnicke in Fuckel, Symb. Myc. ii: 11 (1873).

NEPAL: Ringmigaon, Phoksumdo Tal, 4,200 m.; in ovaries of *Setaria* sp.; 20 Sept. 1952, *Polunin, Sykes & Williams* 3524.

Distribution: America, Europe and abundantly recorded from India.

Ustilago morinae Padwick & Azmatullah in Myc. Pap. x: 1 (1944).

NEPAL: Dozam Khola, near Simikot, 3,150 m.; on inflorescence of *Morina polyphylla* Wall. ex DC.; 30 May 1952, *Polunin, Sykes & Williams* 4228.

Distribution: Hitherto only recorded on *Morina longifolia* Wall. ex DC., from Kashmir.

Ustilago olivacea (DC.) Tul. in Ann. Sci. Nat. Sér. 3, Bot. xvii: 88 (1847).

Uredo olivacea DC. in Lam. & DC., Fl. Franç. ed. 3, vi: 78 (1815).

NEPAL: Gilam, Tila valley, 1,650 m.; in ovaries of *Carex* sp. on cornfield banks; 19 Apr. 1952, *Polunin, Sykes & Williams* 1914.

Distribution: Previously known in America, Europe, and on *Carex cruciata* Wahl. from N.W. Himalayas.

ASCOMYCETES

Cyathipodia corium (Weberb.) Boud., Hist. & Class. Discomyc. Eur.: Paris 39 (1907).

Peziza corium Weberb., Pilze Nord Deutsch.: t. 3, fig. 7 (1873).

NEPAL: Dojam Khola, 4,800 m.; growing among dwarf *Salix*; 23 Sept. 1952, *Polunin, Sykes & Williams* 3567.

Distribution: America, Europe and Nepal.

Helvella crispa Fr., Syst. Myc. ii: 14 (1822).

NEPAL: Lulo Khola, 3,900 m.; in leaf soil of coniferous forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3446.

Distribution: America, Europe, India.

Leptopodia elastica (Fr.) Boud. in Bull. Soc. Myc. Franc. i: 99 (1885).

Helvella elastica Fr., Syst. Myc. ii: 21 (1822).

NEPAL: Suli Gad, below Lulo Khola, 3,900 m.; in coniferous forest; 16 Sept. 1952, *Polunin, Sykes & Williams* 3454.

Distribution: America, Europe, India and Japan.

Leptopodia pezizoides (Fr.) Boud., Ic. Myc. ii: t. 235 (1909).

Helvella pezizoides Fr., Syst. Myc. ii: 20 (1822).

S.E. TIBET: Kongbo, Mira La, 1,200 m.; growing through the undergrowth of dwarf *Salix*; 17 Aug. 1938, *Ludlow, Sherriff & Taylor* 6094.

Distribution: hitherto only known from Europe.

Sarcoscypha sherriffii Balfour-Browne, sp. nov. (Fig. 5.)

Apothecia 2–5 cm. diametro, subsessilia, cupulata demum applanata, extus luteo-brunnea et leniter tomentosa: hymenium levis, aurantioflavum: subhymenium hyphis 3μ diametro, textum uniformum formantibus: asci $350-400 \times 13-15\mu$, cylindracei: ascosporeae $25-35 \times 10-12\mu$, uniseriatae, ellipsoideae vel oblongae, hyalinae, leves, globulis olearis: paraphyses filiformae, 2μ diametro.

Ad ramos putridos dejectos in silva densa.

S.E. TIBET: Mönyul, Gyipu, Nyam Jang Chu, 2,550 m.; 24 March 1936, *Ludlow & Sherriff* 1228. (Herb. Brit. Mus., holotype).

This species differs from *S. coccinea* (Fr.) Cke. in its colour and in the possession of blunter spores and a very slight tomentum. Superficially it resembles *Peziza aurantia* Fr.

Spathularia flavida Fr., Syst. Myc. i: 491 (1821).

S.E. TIBET: Kongbo, Sang La, Tsangpo valley, 4,200 m.: 27 June 1938, *Ludlow, Sherriff & Taylor*.

Distribution: previously known from America, Europe, Siberia, Mongolia.

Chlorosplenium aeruginosum De Not., Disc. Comm. Critt. Ital.: 376 (1864).

S.E. TIBET: Pome, Trulung, 2,100 m.; on dead wood; 13 Jan. 1947, *Ludlow, Sherriff & Elliot* 12138.

Distribution: cosmopolitan.

Corynelia fruticola (Pat.) Höhnelt in Sitzungsber. Kaiserl. Akad. Wiss. Wien, math.-naturwiss. Kl. cxx: 450 (1911).

Capnodium fruticolum Pat. in Journ. de Bot. iii: 258 (1889).

NEPAL: Maina, between Jajarkot and Jumla, 1,950 m.; on fruits of *Myrsine africana* L.; 6 Apr. 1952, *Polunin, Sykes & Williams* 3865.

Distribution: parasitic on *Myrsine* in India and China and on *Rapanea melanophlocos* R.Br. in S. Africa.

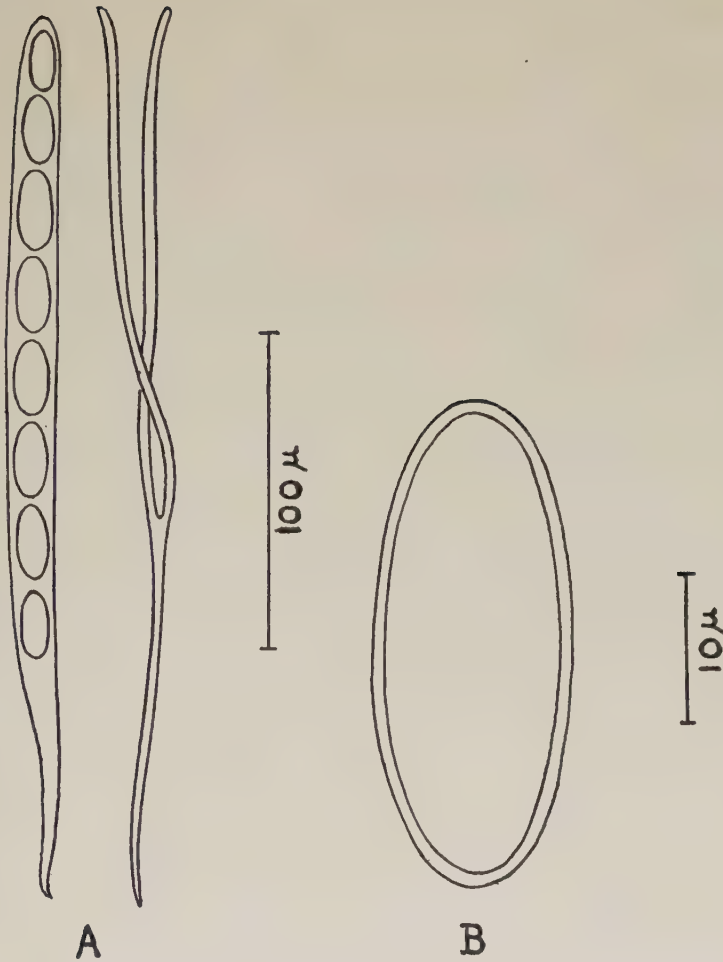


FIG. 5. *Sarcoscypha sherriffii* Balfour-Browne.

A. Ascus and paraphyses. B. Ascospore. Both A and B from *Ludlow & Sherriff 1228*.

Geoglossum ophioglossoides Sacc., Syll. Fung. viii: 43 (1889).

S.E. TIBET: Kongbo, Mira La, Nyang Chu, 3,600 m.; among dwarf *Vaccinium*; 17 Aug. 1938, *Ludlow, Sherriff & Taylor 6095*.

Distribution: cosmopolitan.

Tympanis spermatispora (Nyl.) Nyl. in Not. Soc. Fauna Fl. Fenn. x: 70 (1869).

Patellaria spermatispora Nyl. in Not. Soc. Fauna Fl. Fenn. iv: 125 (1858).

S.E. TIBET: Takpo, Lenda, Tsangpo valley, 3,300 m.; on *Populus* sp.; 8 May 1938, *Ludlow, Sherriff & Taylor 4175*.

Distribution: America, Europe and S.E. Tibet.

Taphrina deformans (Berk.) Tul. in Ann. Sci. Nat. Sér. 5, Bot. v: 128 (1866).

Ascosporium deformans Berk., Outl. Brit. Fungol. t. 1, fig. 9 a, b (1860).

NEPAL: Samela, 2,190 m.; causing distorted leaves in *Prunus* sp.; 4 Apr. 1952, *Polunin, Sykes & Williams* 1855.

S.E. TIBET: Migyitun, Tsari Chu, 2,550 m.; on *Prunus cornuta* (Wall.) Steud.; 28 May 1936, *Ludlow, Sherriff & Taylor* 1722a.

Distribution: cosmopolitan.

Taphrina pruni (Fuck.) Tul. in Ann. Sci. Nat. Sér. 5, Bot. v: 129 (1866).

Exoascus pruni Fuck., Enum. Fung. Nass. ser. 1: 29 (1860).

KASHMIR: Gund, Sind valley, 2,250 m.; on fruits of *Prunus padus* L.; 28 June 1940, *Ludlow & Sherriff* 7692.

Coleroa daphnes Balfour-Browne, sp. nov. (Fig. 6.)

Peritheciis hypophyllis, in greges orbiculares dispositis, superficialis, subcarbonaceis, atrobrunneis, globosis, 200–300 μ diam.; ostiolo inconspicuo; setulis rigidis, fuscis, non-septatis, apice acutis, basi incrassatis 65–75 $\times$ 5–7 μ : ascis cylindraceo-clavatis, brevissime stipitatis, 60–70 $\times$ 9–12 μ : sporidiis uni- vel bi-seriatis, fuscoideis, 1-septatis, non vel leviter constrictis, pallideolivaceis, 15–17 $\times$ 5–6.5 μ : paraphysibus indistinctis. In foliis vivis *Daphnes* sp.

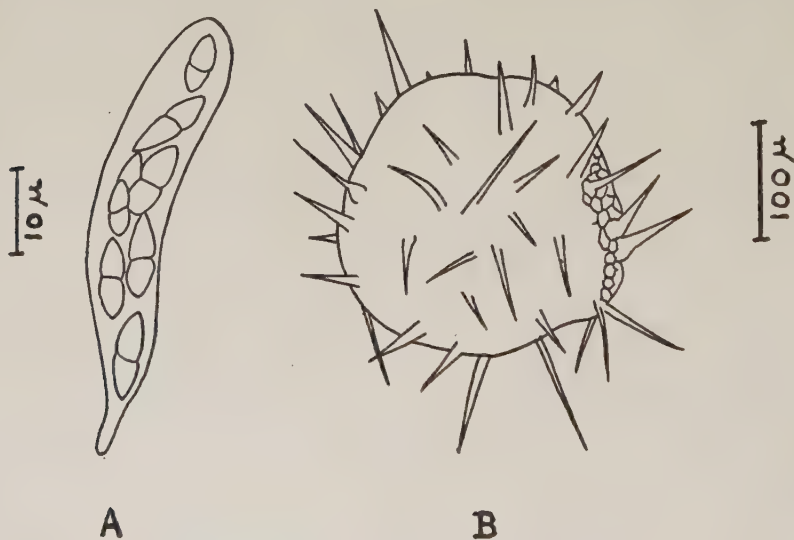


FIG. 6. *Coleroa daphnes* Balfour-Browne.

A. Ascus containing spores. B. Perithecium. Both A and B from *Ludlow, Sherriff & Taylor* 5585a.

S.E. TIBET: Kongbo, Tsari Sama, Langong, 4,200 m.; 16 June 1938, *Ludlow, Sherriff & Taylor* 5585a. (Herb. Brit. Mus., holotype).

This fungus is not unlike *Trichosphaeria macularis* Syd. & Butl. (Ann. Myc. ix: 402 (1893)) but differs by its septate spores and larger size.

Cordyceps sinensis (Berk.) Sacc., *Michelia* i: 320 (1878).

Sphaeria sinensis Berk. in Hook., *Lond. Journ. Bot.* ii: 207 (1843).

NEPAL: Chakure Lekh, south of Jumla, 4,200 m.; open turf slopes; 21 July 1952, *Pollunin, Sykes & Williams* 4832.

BHUTAN: Phage La, 4,500 m.; 27 Aug. 1949, *Ludlow, Sherriff & Hicks* 17208. Collected by natives for export to India as a medicine.

S.E. TIBET: Kongbo, Nyima La, Tsangpo valley, 4,560 m.; 4 July 1938, *Ludlow, Sherriff & Taylor* 5115. Mira La, Gyamda Chu valley, 4,650 m.; 15 Aug. 1938, *Ludlow, Sherriff & Taylor* 5115a

Distribution: previously recorded from India and China.

Ophiobolus pangkarensis Balfour-Browne, sp. nov. (Fig. 7.)

Maculis amphiginis, angulatis, aurantio-brunneis: peritheciis hypophyllis, raro epiphyllis, sparse gregariis, innatis deinde plusminusque erumpentibus, obliquiter vel

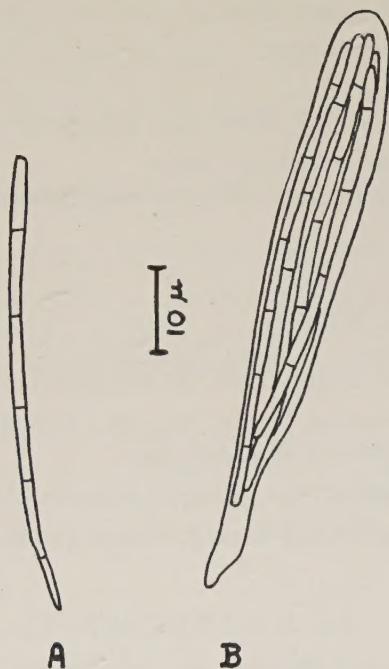


FIG. 7. *Ophiobolus pangkarensis* Balfour-Browne.

A. Ascospore. B. Ascus containing spores. Both A and B from *Ludlow, Sherriff & Taylor* 6861.

perpendiculariter in foliis directis, atris, globosis, carbonaceis imprimis ad apicem, clypeo absentis, 0.3 mm. diam.; ostiolo breviter papilliformi, ascis cylindratis vel cylindratis-clavatis, octosporis, breviter stipitatis, $100-120 \times 15-18 \mu$: ascosporis parallelis vel fasciculatis, cylindratis, vix curvulis, olivascentibus, 4-6 septatis, $80-90 \times 4-5 \mu$: paraphysibus persistentibus, filiformibus, hyalinis, 3-4 μ crassis, apicibus interdum liberis.

In foliis vivis *Salviae roborowskii* Maxim.

S.E. TIBET: Kongbo, Drukla Chu, near Pangkar, 3,450 m.; 20 Aug. 1938, *Ludlow Sherriff & Taylor* 6861. (Herb. Brit. Mus., holotype).

This fungus has been placed in the genus *Ophiobolus*, rather than in *Linospora*, on account of its non-clypeate perithecia, its very short or pappiliform and erect beak, its persistent papaphyses, some of which appear to be attached and others free, and its stipitate asci with walls which are not readily water soluble. On the other hand it is foliicolous whereas most described species of *Ophiobolus* are caulicolous.

Polystigma fulvum (Fr.) Chev., Fl. Gen. Env. Par. i: 458 (1826).

Dothidea fulva Fr., Syst. Myc. ii: 554 (1823).

Polystigma ochraceum Sacc., in Att. Soc. Veneto-Trent. Sci. Nat. 1875: 96 (1875).

NEPAL: Below Mugu, Mugu Khola, 3,450 m.; on leaves of *Cerasus* sp.; 24 Aug. 1952, *Polunin, Sykes & Williams* 3019.

Distribution: Europe and India.

Xylaria hypoxylon (Fr.) Grev., Fl. Edin.: 355 (1824) var. **hypoxylon**.

Sphaeria hypoxylon Fr., Syst. Myc. ii: 327 (1823).

BHUTAN: Pangkar, 2,700 m.; on old tree in dense rain forest; 24 Apr. 1949, *Ludlow, Sherriff & Hicks* 18750.

Conidial state only.

Distribution: cosmopolitan.

var. **tropica** Syd. & Butler in Ann. Myc. ix: 418 (1911).

NEPAL: Chutta, south-east of Jumla, 3,150 m.; among moss on fallen tree trunk; 27 Sept. 1952, *Polunin, Sykes & Williams* 5417.

Distribution: first described from Mysore. Also recorded from the Phillipines.

Differs from the normal form in having smaller spores, $9-12 \times 3-5 \mu$.

FUNGI IMPERFECTI

Hendersoniella tibetica Balfour-Browne, sp. nov. (Fig. 8.)

Pycnidis gregariis, atris, erumpentibus vel superficialis, carbonaceis, globosis, $300-400 \mu$ diam., per porum minutum dehiscentibus: conidiophoris hyalinis, filiformibus, flexuosis: conidiis olivaceis, ellipticis vel fusoides, triseptatis, leviter constrictis, $13-16 \times 3.5-5 \mu$.

In cortice *Ribis* sp.

S.E. TIBET: Kongbo, Molo, 315 m.; 19 May 1938, *Ludlow, Sherriff & Taylor* 4334b. (Herb. Brit. Mus., holotype).

Differs from the other species described for *Ribes* spp. in size and in the distinctly superficial pycnidia.

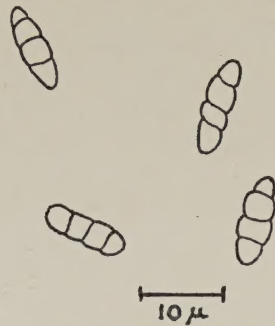


FIG. 8. *Hendersoniella tibetica* Balfour-Browne.
Conidia from Ludlow, Sherriff & Taylor 4334b.

Melasmia acerina Lév. in Ann. Sci. Nat. Sér. 3, Bot. v: 276 (1846).

S.E. TIBET: Kongbo, Doshong La, Tsangpo valley, on leaves of *Acer caudatum* var. *multiserratum* (Maxim.) Rehd.; 22 Sept. 1938, Ludlow, Sherriff & Taylor 4954c. Kongbo, Tamnyen Chu, 3,000 m.; on same host; 24 June 1938, Ludlow, Sherriff & Taylor 4974b.

Distribution: America, Europe and S.E. Tibet.

Melasmia punctata Sacc. & Roum., Michelia ii: 632 (1882).

S.E. TIBET: Kongbo, Doshong La, Tsangpo valley, on leaves of *Acer caudatum* var. *multiserratum* (Maxim.) Rehd.; 22 Sept. 1938, Ludlow, Sherriff & Taylor 4954c. Kongbo, Tamnyen Chu, 3,000 m.; on same host; 24 June 1938, Ludlow, Sherriff & Taylor 4974d.

Distribution: America, Europe and S.E. Tibet.

Both the large black stromata of *M. acerina* and the smaller circinately grouped stromata of *M. punctata*, with their respectively larger and smaller conidia, occurred on many of the same leaves. The ascigerous stage had not yet developed in either species.

Trichoderma viride Fr., Syst. Myc. iii: 215 (1829).

S.E. TIBET: Kongbo, valley of Lilung Chu, west side of river, 3,160 m.; on fallen birch log; 24 May 1938, Ludlow, Sherriff & Taylor 4450.

Distribution: cosmopolitan.

Fumago vagans Pers., Myc. Eur. i: 9 (1822).

S.E. TIBET: Kongbo, Molo, 3,300 m.; on *Quercus aquifolioides* Rehd. & Wils.; 23 May 1938, Ludlow, Sherriff & Taylor 3832. Sang La, Tsangpo valley, 3,150 m.; on culms of *Bambusa* sp.; 15 July 1938, Ludlow, Sherriff & Taylor 5835a. Miling, Tsangpo

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